when several years ago I asked the accomplished Chief of the Hydrographic Office, Bureau of Navigation, how many vessels he supposed they had saved, he responded: "Not many, I think." It gives me pleasure to state that the same gentleman has lately recommended my work for use in the Navy, saying, "that his experience bears it out."

The fate of the Huron is but another of the many victims to the Moloch of erroneous meteorological theory; it is too much to hope that it will be the last one, but let us trust that such terrible events will grow less and less frequent until the time comes when there may be none fairly chargeable to a lack of a knowledge of the true nature of storms.

Bituminous Material from Pulaski County, Virginia, U. S.

By Dr. Charles M. Cresson.

(*Read before the American Philosophical Society, October* 19, 1877.)

The locality from which the sample was taken, is four and a half miles north of the Atlantic, Mississippi and Ohio Railroad property of W. T. Hart, said to be from a vein averaging 32 feet in thickness. Dip variable from 30° to 50°; is covered by 2 feet of fire clay. Footwall, soft gray slate. Sample from 45 feet below water level.

Results of laboratory examination as follows:

Color	Black.
Streak	Brown.
Structure	Lamellar and Friable.
Specific Gravity	1.566.
Moisture and Volatile Matter	7.50 per cent.
Fixed Carbon	65.52 "
Ash	26.98 "

There was no clinker got in the laboratory experiments, although the ash was subjected to a high degree of heat.

Sulphur	0.165 per cent.

One pound of material burned in Oxygen evaporated 10.12 pounds of water from 212° Fahrenheit.

After deducting the average losses, by heat absorbed by ash, products of combustion and radiation, there remains as the result of the combustion of one pound of fuel, 7.59 pounds of water evaporated, or about the same amount as is evaporated by burning one pound of the best coke from bituminous coals.

Experimental trials made in locomotive and stationary tubular boilers, with samples supposed to represent an average of the vein, produced somewhat different results from those obtained from the selected samples sent to the Laboratory for analysis. Upon the large scale, this fuel gave at first an exceeding hot and lively fire, but as soon as the bituminous matter was burned off, the fire became dull and required stirring. When the draft was insufficient to carry off the ash, there was gradually formed a spongy, lava-

like cinder, which it was necessary to remove in order to obtain sufficient draft. It therefore appears, that although samples of this fuel can be selected which will give favorable results upon the small scale, the mass of the vein can hardly be used for the general purposes to which anthracite is applicable, and that it requires some especial device for the removal of the voluminous ash, to enable the successful and coutinuous use of the fuel for ordinary purposes.

CONTRIBUTIONS FROM THE LABORATORY OF THE UNIVERSITY OF PENNSYLVANIA.

No. XII.

A new method for the Decomposition of Chromic Iron. *By Edgar F. Smith, Ph. D., Assistant in Analytical Chemistry, University of Pennsylvania.*

(*Read before the American Philosophical Society, December* 21, 1877.)

Recently I was led to try the action of bromine and sodium hydrate upon pulverized chromic iron, and as the amount of chromium extracted in this manner was rather surprising, the following experiments were made, to ascertain what effect bromine alone in presence of water would have upon the same substance.

I. Moderately fine chromic iron (.1500 Grm.) was placed in a tube of hard glass, and after adding dilute bromine water and sealing the tube, the latter was placed in an air-bath and heated for twelve hours at a temperature of about 130° C.; when cool the tube was opened and its contents poured upon a filter. The insoluble residue was thoroughly washed by decantation, and upon the filter, with hot water. The filtrate after concentration was treated with a slight excess of ammonium hydrate, causing the precipitation of aluminum hydrate, &c. The latter was filtered off and the yellow colored filtrate, then warmed with hydrogen sulphide to reduce the chromic acid to oxide. The precipitate formed, after protracted digestion, was allowed to settle and the clear liquid filtered. After washing the precipitate it was dissolved in a few drops of dilute hydrochloric acid and re-precipitated. This operation was repeated and the precipitate finally transferred to a filter washed, dried and ignited. The amount of chromium oxide found corresponded to 15.50 per cent, of the substance taken.

The amount of chromium remaining in the material not attacked by the bromine was not estimated.

II. .2000 grms, substance, as finely pulverized as could be obtained by grinding the material in an agate mortar, were heated in a sealed tube with water saturated with bromine and a few drops of bromine. The tube was allowed to remain in the oven for four days, the temperature ranging from 175° – 190° C. Upon opening the tube its contents were poured into a